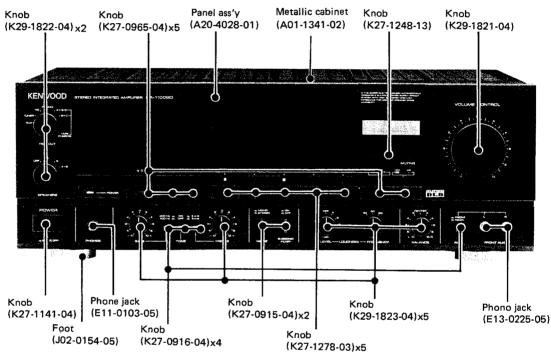
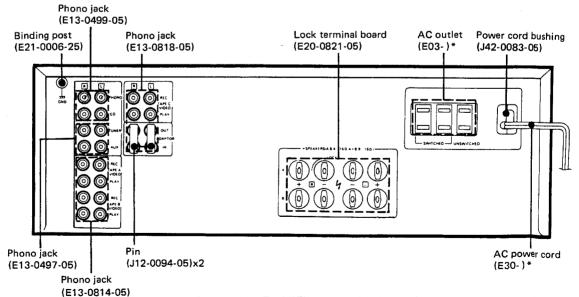
KENWOOD II-Metallic cabinet Panel ass'y Knob Knob Knob (K29-1822-04)_{x2} (A20-4028-01) (A01-1341-02) (K27-1248-13) (K27-0965-04)x5

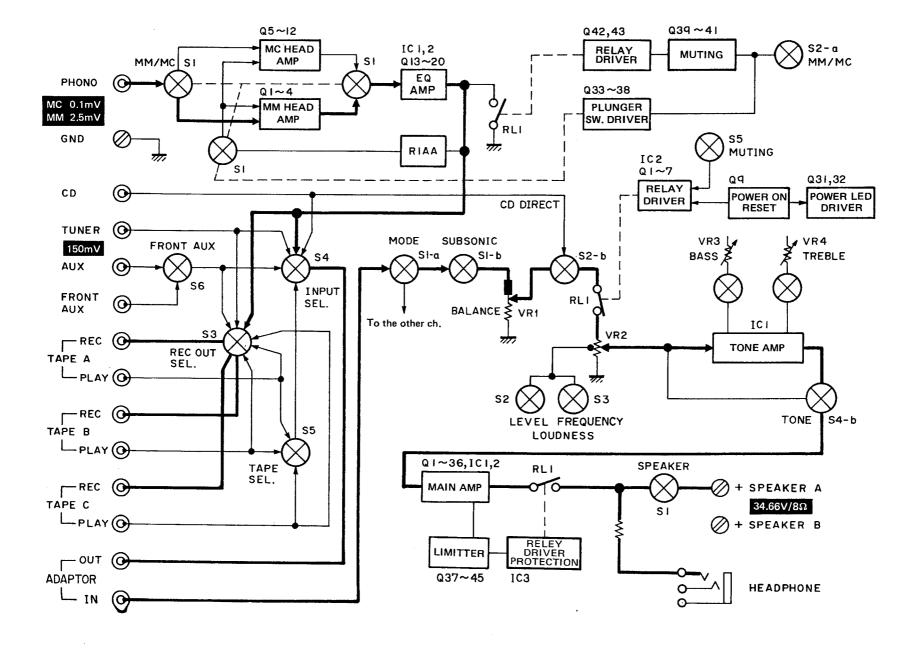
STEREO INTEGRATED AMPLIFIER





Caution: In EXPLODED VIEW, parts with the exploded numbers larger than 700 are not supplied.

*Refer to Parts list on page 12,





(X08-2160-81)

Element	Use and function	Operation, rating and interchangeability
Q1~Q4	Differential amp	Input differential amp for MM cartridge.
Q5~Q12	Differential amp	Input differential amp for MC cartridge.
Q13~Q16	Cascade	
Q17, Q18	For constant current supply	Determines the current supplied to the input differential amp, together with D11~D13 and R31~R34.
Q19~Q22	For constant current supply	Constant current supply circuit for output complementary circuit Q23~Q26.
Q23~Q26	Output complementary circuit	
Q27, Q28	Power supply control transistor	Control transistor for EQ constant voltage circuit.
Q29, Q30	Constant current for power supply	Constant current supply transistor for Q27 and Q28.
Q31, Q32	Flip-flop	Drives power indicator.
Q33~Q38	Plunger relay drive	Drives the plunger of the relay which switches MM and MC mode.
Q39~Q43	Muting	Mutes the output when switching between MM and MC mode.
IC1	Equalizer amp	

(X07-2200-11)

Element	Use and function	Operation, rating and interchangeability
Q1, Q2	First stage differential amp	
Q3, Q4	Constant current	Constant current transistors for first stage differential amp Q1 and Q2.
Q5~Q8	Cascade	
Q9, Q10	Second stage differential amp	
Q11~Q14	Third stage differential amp	Class A amplifier.
Q15, Q16	Voltage shift	
Q17, Q18	Constant current	
Q19, Q20	Bias	
Q21~Q24	Pre-driver	
Q29~Q32	High power	High output final transistor.
Q33~Q38	Low power	Low output final transistor.
Q37~Q44	Current protection	Q43 and Q44 are high tension transistors.
Q45	Protection driver	Drive transistor for protection IC.
IC1, I C2	High/Low power selector IC	Switching IC for high and low output signal transistor.
IC3	Protection relay driver	Driven by Q45 to drive protection relays RL1 and RL2.

(X11-1890-01)

Element	Use and function	Operation, rating and interchangeability	
Q1, Q2	Muting	Controlled by muting switch S5.	
Q3	Muting indicator inverter	Controlled by IC2 to turn off at muting on.	
Q4, Q7	Muting relay driver	Controlled by IC2 to turn on when muting relay RL1 is activated.	
Q5, Q6	Muting indicator driver	Turns on when Q3 is on (muting switch S5 is on) to light the indicator.	
Ω9	Power on reset		
IC2	Relay driver	Controls the muting relay RL1 and the muting indicator circuit.	

KA-1100SD

CIRCUIT DESCRIPTION

DESCRIPTION OF SUPER DLD CIRCUIT

With the former DLD amp which has high efficiency, the heatsink can be small, compared with class B amplifier which has the same output power, resulting in high cost performance.

However, the normal listening output power is several mW to several hundred mW and the high voltage circuit seldom operates. For example, with the circuit shown in Fig. 1, the high and low setting is $30W/8\Omega$ to obtain maximum output power of $100W/8\Omega$. Therefore, at low

power of $0\sim30W$, low voltage circuit consisting of Q33, Q35, D2, D9, D11, C70 and C71 functions and high voltage circuit consisting of D1, C72 and C73 operates rarely.

When the high voltage circuit operates, the low voltage circuit does not operate.

With the super DLD circuit, the circuit which is not operated is effectively used to improve performance and tone quality. The operation of the super DLD is described below.

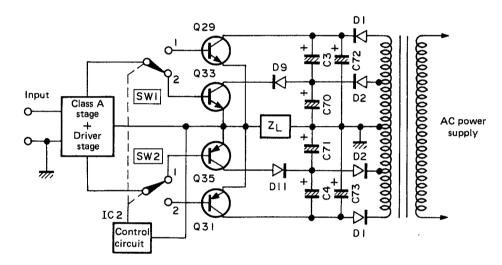


Fig. 1

OPERATIONAL DESCRIPTION

As shown in Fig. 1, C3 and C4 are added to the former DLD circuit to form super DLD circuit. Hereafter, the operation of the amplifier is calss B and the description applies to positive side half cycle.

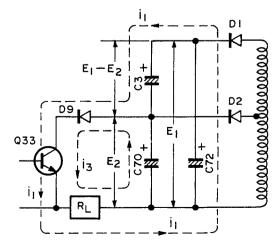


Fig. 2-1

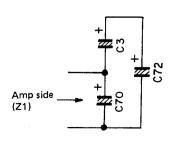


Fig. 2-2



1. Low power operation

When Q29 opens, the circuit in Fig. 1 can be seen as an equivalent circuit shown in Fig. 2-1.

- At non-signal condition, C3, C70 and C72 are fully charged and voltages E1, E2 and E1—E2 are supplied to C72, C70 and C3 respectively.
- When the signal is applied and Q33 turns on, C70 supplies current i₃ to RL via D9 and Q33 and C72 supplies current i₁ to RL via C3, D9 and C33. Namely, C3 functions as an i₁ bias circuit.
- When this operation is viewed from the amp, the circuit can be described as shown in Fig. 2-2. Namely, the power impedance Z1 viewed from the amp is as follows.

$$Z_1 (j\omega) = \frac{1}{j\omega} \cdot \frac{C3 + C72}{C3 \cdot C72 + C70 (C3 + C72)}$$

Assuming that C3 = C70 = C72,

$$Z_1 (j\omega) = \frac{1}{j\omega} \cdot \frac{1}{\frac{3}{2}C70}$$

Therefore, the curcuit is the same as the former circuit in which C3 and C4 are not employed and C70 is increased by 3/2. The power impedance is decreased by 2/3, to 33%.

Therefore, the AC component at collector voltage of Q33 is decreased, resulting in improved performance and sound quality.

2. High power operation

When Q33 opens, the circuit in Fig. 1 can be seen as an equivalent circuit shown in Fig. 3—1.

- When the signal is supplied and Q29 turns on, the series circuit consisting of C3 and C70 supplies i₃ to RL via Q29 and C72 supplies i₁ to RL via Q29.
- When this operation is viewed from amp, the circuuit can be described as shown in Fig. 3-2. Namely, the power impedance Z2 viewed form the amp is as follows.

$$Z_2 (j\omega) = \frac{1}{j\omega} \cdot \frac{C3 + C70}{C3 \cdot C70 + C72 \cdot (C3 + C70)}$$

Assuming that C3 = C70 = C72,

$$Z_2 (j\omega) = \frac{1}{j\omega} \cdot \frac{1}{\frac{3}{2}C72}$$

Therefore, the circuit is the same as the former circuit in which C3 and C4 are not employed and C70 is increased by 3/2. The power impedance is decreased by 2/3, to 33%. Therefore, the AC component at collector voltage of Q29 is decreased, resulting in improved performance and sound quality.

This operation can be applied to the negative side half cycle.

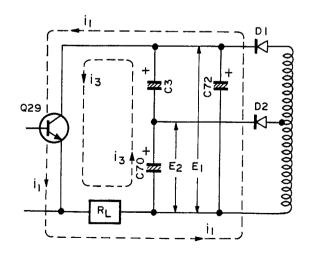


Fig. 3-1

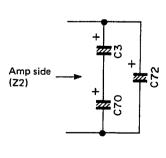
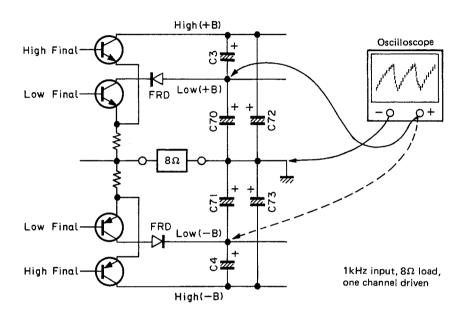


Fig. 3-2



CHECKING METHOD OF SUPER DLD CIRCUIT OPERATION

Connect an oscilloscope to LOW (+B) and GND.
 Set the oscilloscope input coupling mode to AC.



2. Continuously change the output voltage and monitor the ripple waveform at high and low switching.

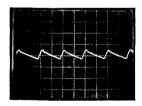


Photo 1 Volume : 0



Photo 2 Just before switching

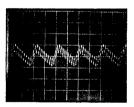


Photo 3 Just after switching

3. Connect the oscilloscope to HIGH (-B) and GND. Set the oscilloscope input coupling mode to AC.

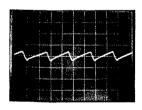


Photo 4 Volume : 0

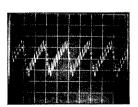


Photo 5 Just before switching

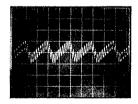


Photo 6 Just after switching

 Check on the opposite channel's LOW (+ B) and HIGH (-B) line in the same way.



CONSTANT-VOLTAGE POWER SUPPLY CIRCUIT

D9: RD20J (B2)

A Zener diode (constant-voltage). This generates the reference voltage for this circuit. Even if the current flowing into D9 fluctuates, the voltage at point A is kept constant (Approximately 20.6V.)

C51: 100µ, 25V

Used as the ripple filter and to prevent the noise generated by D9.

Q27: 2SD313V-AL

A current amplifier. This is necessary when the load current is large or the capacity (Iz) of the Zener diode is small.

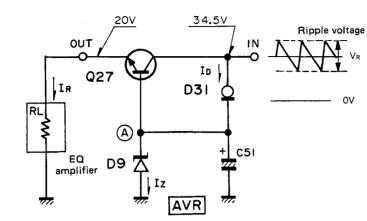
D31: E-272

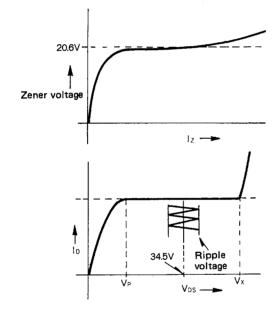
A constant-current element. This supply a constant current to the Zener diode to obtain a more constant voltage.

Constant-current characteristics: When the voltage between the gate and source of the FET is 0 (zero) and VDS is between VP~VX, the drain current changes little.

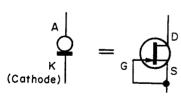
The gate and source of the FET are connected with a constant-current diode (E-272). The anode corresponds to the drain, and the cathode corresponds to the gate and source.

 Constant current diodes E-272 (D27~32) in some preamplifier unit are indicated by the symbols of FET on the silk of the printed circuit board. Insert each of them so that the drain will be connected to the anode and the source to the cathode (See the following figure.)









ADJUSTMENT/REGLAGE/ABGLEICH

ADJUSTMENT

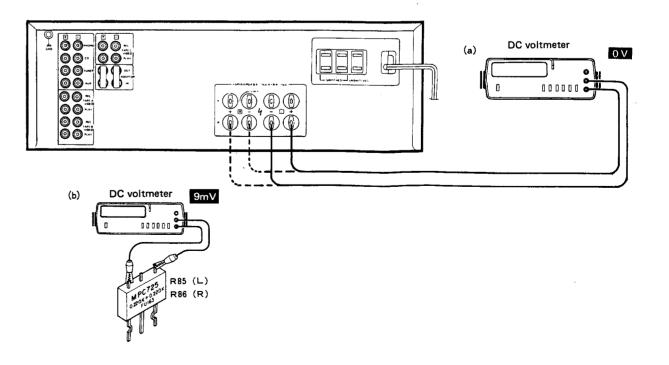
		INPUT	OUTPUT	AMPLIFIER	ALIGNMENT		
No.	ITEM	SETTINGS	SETTINGS	SETTINGS	POINTS	ALIGN FOR	FIG.
Unle	ss otherwise spe	cified, the individu	al switches should be se	as follows: SPEA	KER: B		
1	OFFSET	-	Connect a DC voltmeter to SPEAKER B terminal.	VOLUME: 0	VR1 (L) VR2 (R)	OV	(a)
2	I DLE CURRENT	-	Connect a DC voltmeter across R85 (L) R86 (R)	VOLUME: 0	VR3 (L) VR4 (R)	9mV	(b)

REGLAGE

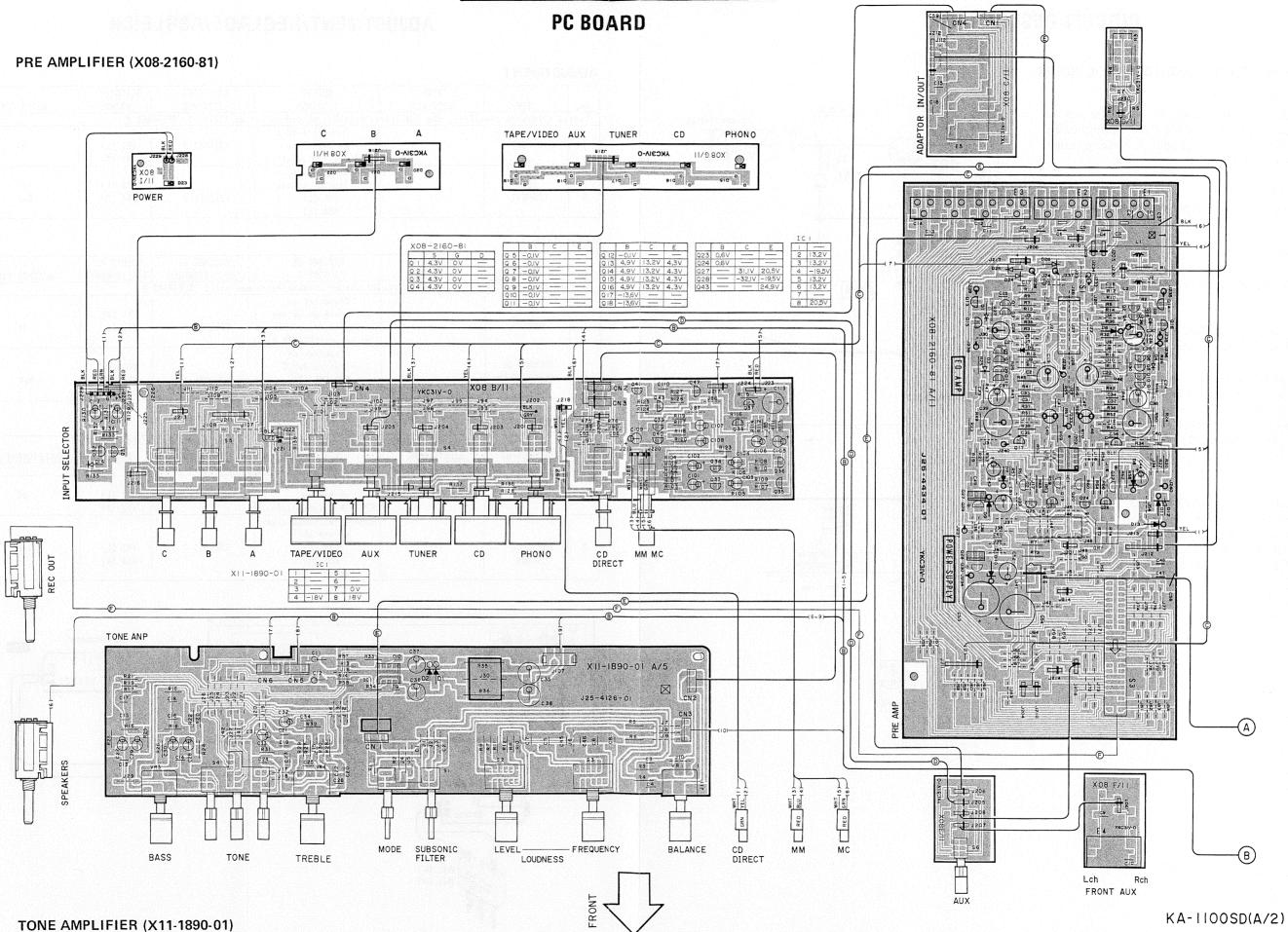
.,,	TTPU	REGLACE DE	REGLAGE DE	REGLAGE DE	POINTS DE		
N*	ITEM	L'ENTREE	LA SORTIE	L'AMPLIFICATEUR	L'ALIGNMENT	ALIGNER POUR	FIG.
Sauf	en cas d'indica	tions spéciales, rég	ler chaque commutateur c	comme suit: SPEAKER	: B		
			Connecter un				
			voltmètre de CC aux		VR1 (G)		
1	OFFSET	_	bornes de sortie	VOLUME: 0	VR2 (D)	07	(a)
			+ et - (SPEAKER B)				
			Connecter un				
	COURANT DE		voltmètre de CC		VR3 (G)		
2	POLARISATION	-	SUR R85 (G)	VOLUME: 0	VR4 (D)	9 m V	(b)
			R86 (D)				1,

ABGLEICH

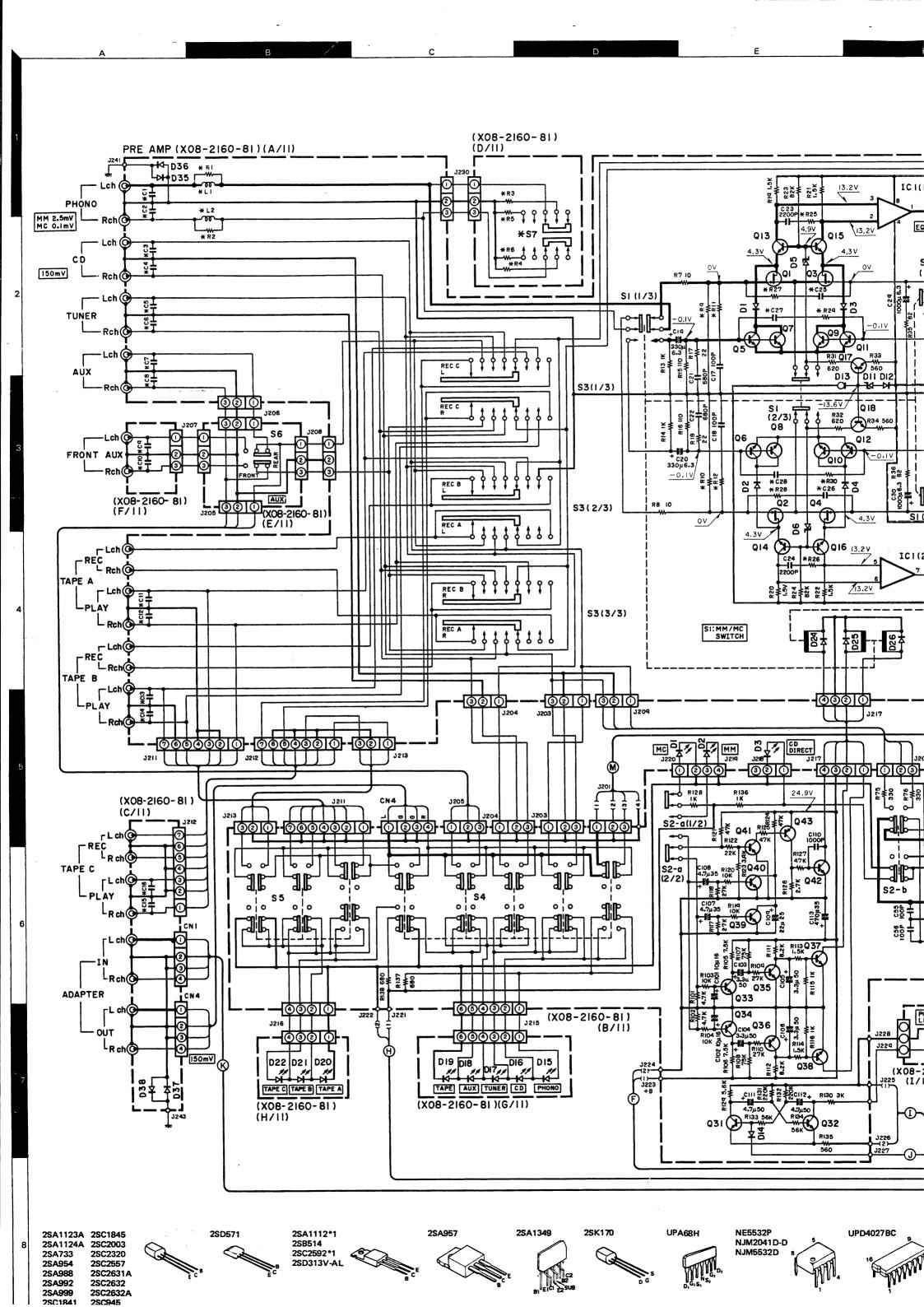
		EINGANGS-	AUSGANG-	VORSTÄRKER-	ABGLEICHE-		
NR.	GEGENSTAND	EINSTELLUNG	EINSTELLUNG	EINSTELLUNG	PUNKTE	ABGLEICHEEN FUR	ABB.
Auße	r wenn anders an	gegeben, die verschi	edenen Schalter wie folgt	einstellen: SPE	AKER: B		
			Einen Gleichspannungs-				
1	OFFSET	_	messer zu	VOLUME: O	VR1 (L)	OV	(a)
			SPEAKER B anschließen.		VR2 (R)		
			Einen Gleichspannungs-				
			messer über				
2	LEERLAUF-	_	R85 (L)	VOLUME: 0	VR3 (L)	9mV	(b)
ĺ	STROM		R86 (R)		VR4 (R)		
			anschließen.				

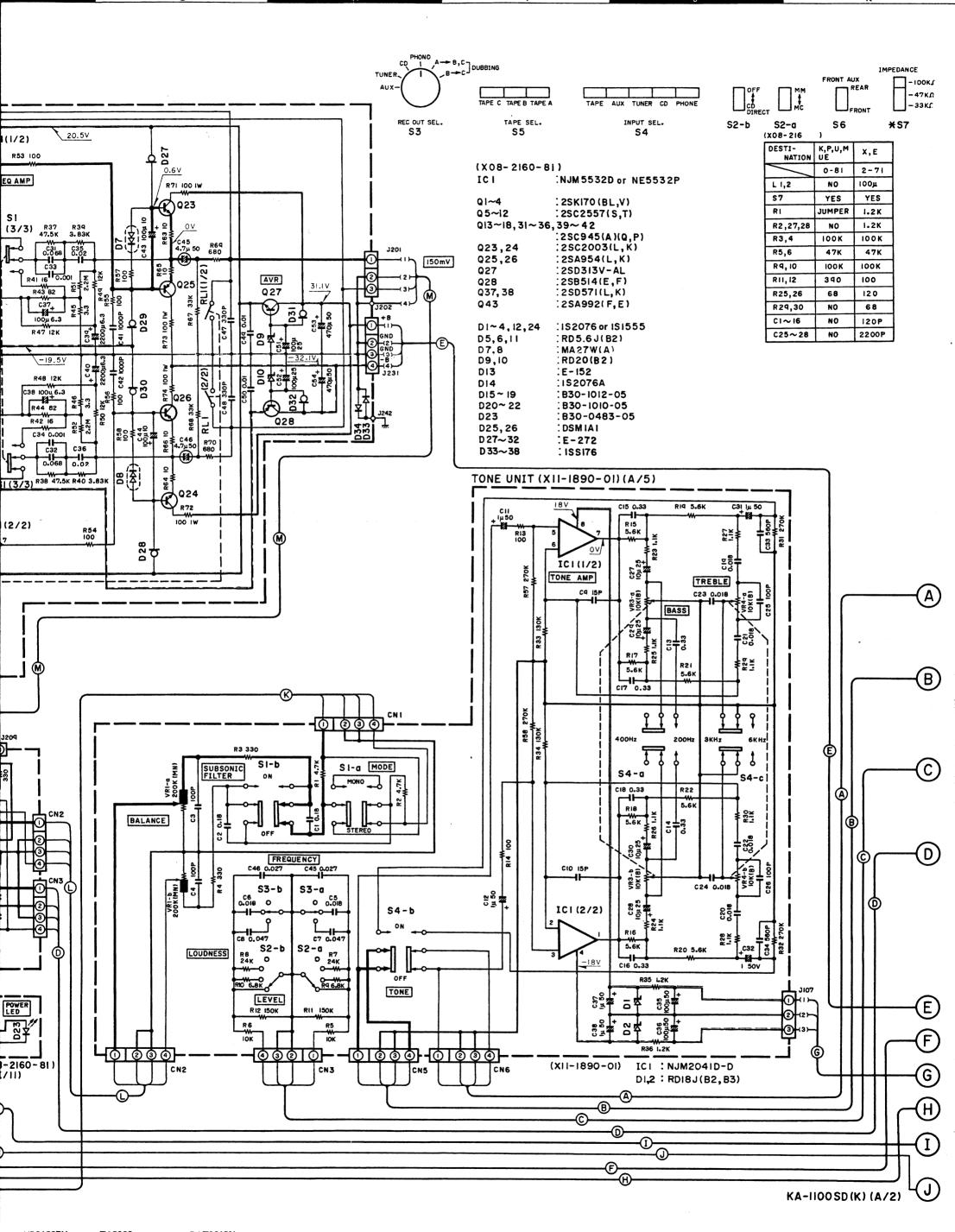


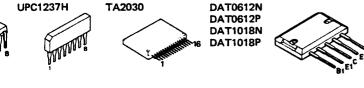
KA-1100SD KA-1100SD



^{*} About Q19 ~ 22, 29, 30 of PERAMP P.C.B. ass'y, refer to Circuit description on page 7.

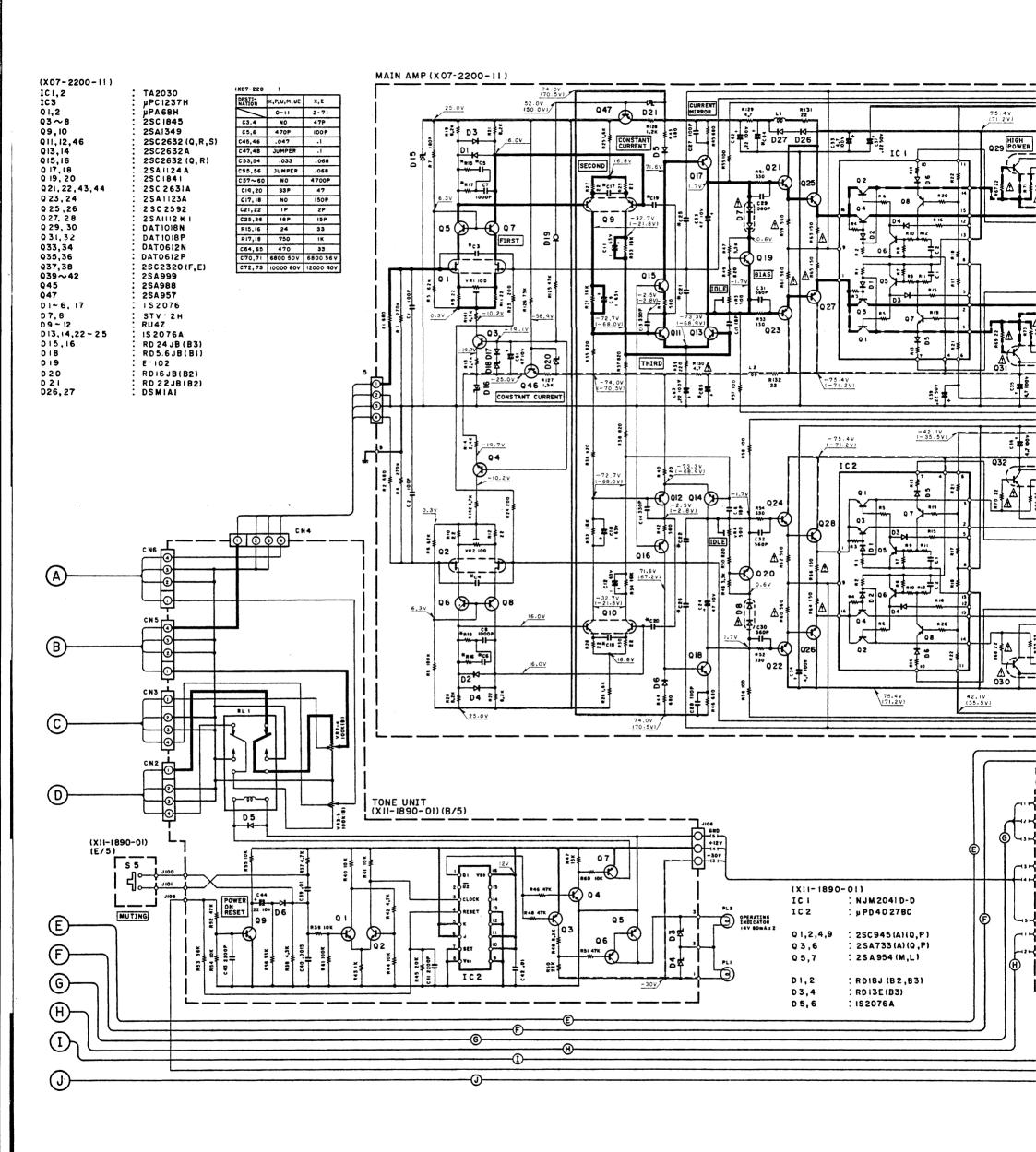


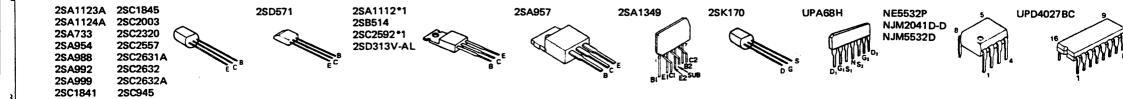


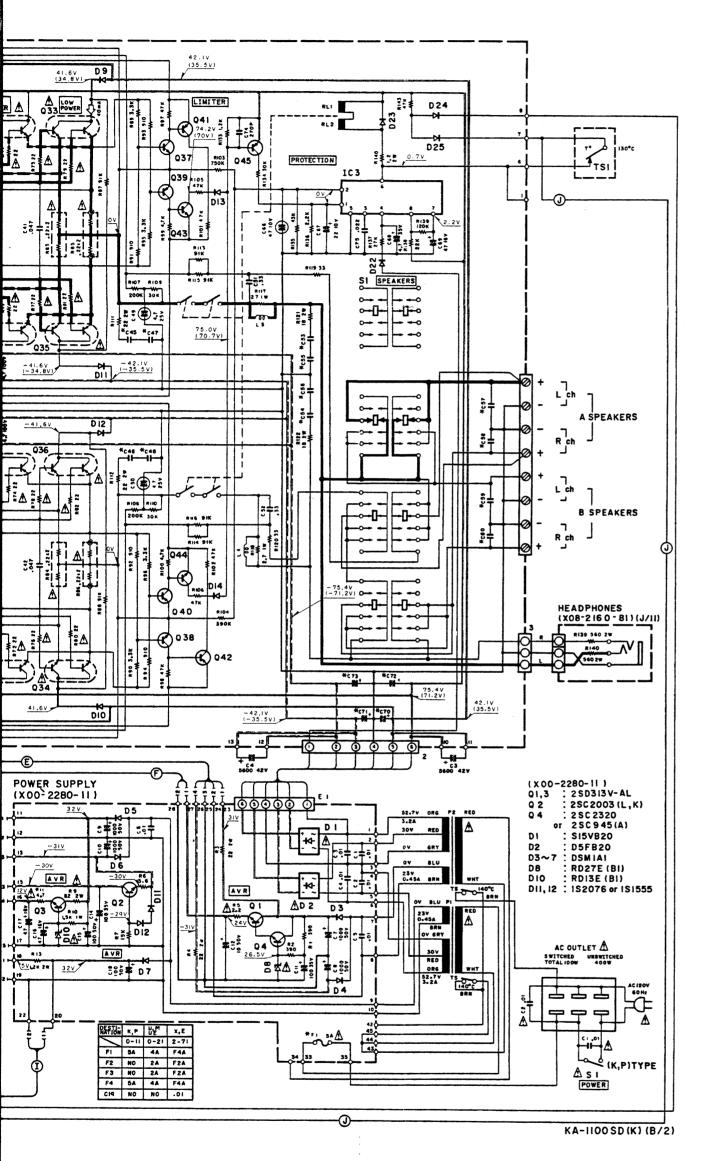


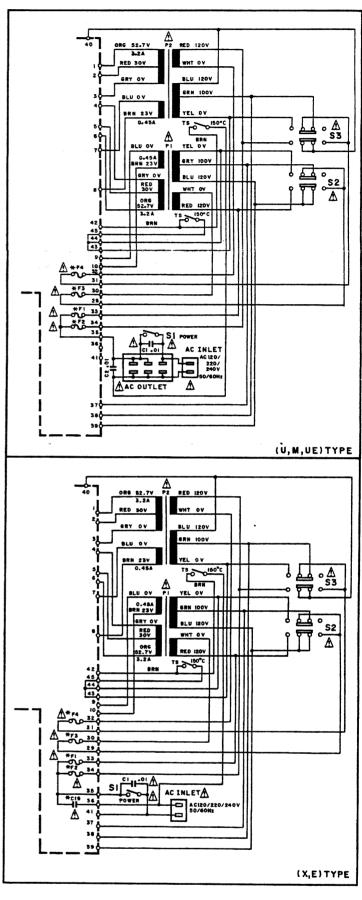
 DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units. CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). Alndicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.











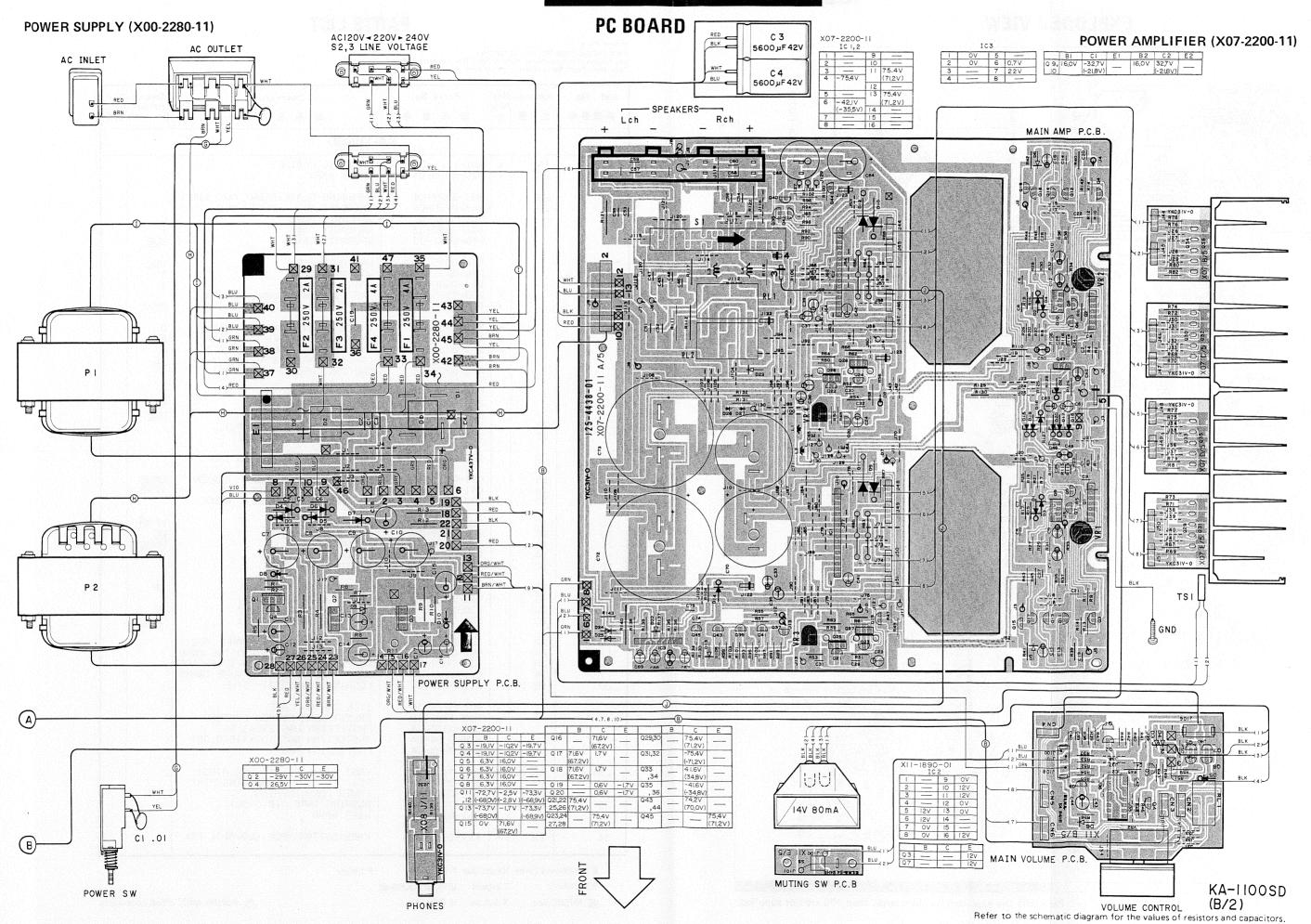


 DC voltages are as measured with a high impedance voltmeter with no signal input. Values may vary slightly due to variations between individual instruments or/and units.

CAUTION: For continued safety, replace safety critical components only with manufacturer's recommended parts (refer to parts list). A Indicates safety critical components. To reduce the risk of electric shock, leakage-current or resistance measurements shall be carried out (exposed parts are acceptably insulated from the supply circuit) before the appliance is returned to the customer.



KA-1100SD KA-1100SD



The PC board drawing is viewing from the side easy to check.

EXPLODED VIEW

244446000 1429 3006 3008 3010 4010 0121 0123 NIEG AUX TUNER CD PHONO 12

Parts with the exploded numbers larger than 700 are not supplied.

PARTS LIST

★ New Parts
Parts without Parts No. are not supplied.
Les articles non mentionnes dans le Parts No. ne sont pas fournis.
Teile ohne Parts No. werden nicht geliefert.

Ref.	No.	Address		Parts No.	Description	Desti- Re
参照	[番号	位置	Parts 新	部品番号	部品名/規格	仕 向備
			1	KA	A-1100SD	
1 2		1A 2A	*	A01-1341-02 A20-4028-01	METALLIC CABINET PANEL ASSY	
5 7 - -		2B 2A		B03-0229-04 B43-0270-04 B46-0092-03 B46-0093-03 B46-0094-03	DRESSING PLATE(FRØNT AUX JACK) BADGE(GØLD) SUPER DLD WARRANTY CARD WARRANTY CARD WARRANTY CARD	K P U <u>UE</u>
-			*	B46-0095-03 B46-0096-03 B46-0098-03 B50-5335-00 B50-5336-00	WARRANTY CARD WARRANTY CARD WARRANTY CARD INSTRUCTION MANUAL(ENGLISH) INSTRUCTION MANUAL(FRENCH)	U <u>UE</u> X E PMXE
- - - -			* *	B50-5337-00 B50-5338-00 B50-5353-00 B58-0222-14 B58-0223-04	INSTRUCTION MANUAL(SPANISH) INSTRUCTION MANUAL(G,D,I) INSTRUCTION MANUAL(ARABIC) CAUTION CARD(PRESET 220V) CAUTION CARD(PRESET 120V)	M E M <u>UE</u> U
- - D1 D3	,2	2B 2B		B58-0245-23 B58-0269-04 B59-0092-00 B30-0469-05 B30-0470-05	CAUTION CARD(FTZ) CAUTION CARD SERVICE DIRECTORY LED(SLP-162B)RED(MM,MC) LED(SLP-262B)GREEN(CD)	E K U <u>UE</u>
PL 1	,2	2B		B30-0445-15	LAMP(14V D.OBA)MUTING IND	
C1 C2 C3	,4	1B 1A 1C	*	C91-0023-05 C91-0647-05 C90-1299-05	CERAMIC 0.01UF AC250V CERAMIC 0.01UF P ELECTRO 5600UF 42WV	UM <u>UE</u> KPXE
10 10 11 11 12		1C 1C 1A 1A 1C		E03-0069-05 E03-0069-05 E03-0058-05 E03-0058-05 E21-0006-25	AC DUTLET AC DUTLET AC INLET AC INLET BINDING POST(GND)	KPUM <u>UE</u> UM <u>UE</u> X E
13 13 13 13		10 10 10 10		E30-0290-05 E30-0726-05 E30-0729-05 E30-0852-05	AC POWER CORD AC POWER CORD (INLET) AC POWER CORD (INLET) AC POWER CORD (INLET)	KP E X UM <u>UE</u>
16 17 18 19 20		2A 2A 2A 1B 1B,1C		G01-0488-04 G01-0489-04 G10-0057-04 G11-0145-04 G11-0192-04	COMPRESSION SPRING(PANEL ASSY) COMPRESSION SPRING(MUTING KNOB NON-WOVEN FABRIC(A20-4028-01AS SOFT TAPE(40X16X12)POWER TRANS CUSHION (40X8X2) SIDE	
-			*	H01-5229-04 H10-1726-12 H25-0078-04 H25-0204-04 H25-022 5 -04	ITEM CARTON CASE POLYSTYRENE FOAMED FOXTURE PROTECTION BAG(235X315) PROTECTION BAG(100X315X0.05) PROTECTION BAG	
25 26 29 30		2B,2C 1C 1C 2B	*	J12-0094-05 J42-0083-05	FOOT (SILVER RING) PIN (SHORTING PIN) POWER CORD BUSHING BUSHING(TAPE A,B,C SW) WIRE BAND	KP
34		2B		K27-0915-04	KNOB(BUTTON)MODE,SUBSONIC FIL	

E: Scandinavia & Europe H:Audio Club K: USA

S: South Africa

T: England U: PX(Far East, Hawaii)

P: Canada

<u>UE</u>: AAFES(Europe) X: Australia M: Other Areas

⚠ indicates safety critical components.



*New Parts

Parts without Parts No. are not supplied.

Les articles non mentionnes dans le Parts No. ne sont pas fournis.

Teile ohne Parts No. werden nicht geliefert.

ſ	Ref. No.		New	Parts No.	Description	Desti- nation	Re-
	参照番号	位 遺	Parts 新	部品番号	部品名/規格		marks 備考
	35 36 37 38 39	2B 2A,2B 2A 2A 2A 2A		K27-0916-04 K27-0965-04 K27-1141-04 K27-1248-13 K27-1278-03	KNOB(BUTTON)BASS,TONE,TREB,AUX KNOB(BUTTON)A,B,C,CD,MM/MC KNOB(BUTTON)POWER KNOB(BUTTON)MUTING KNOB(BUTTON)SELECTOR(PNL ASSY)		
	40 41 42	2A 2A 2A	*	K29-1821-04 K29-1822-04 K29-1823-04	KNOB VOLUME CONTROL KNOB REC OUT, SPEAKERS KNOB BASS, TRE, LEV, FRED, BAL		
⚠ ⚠ ⚠ ⚠	45 45 45 46 46	1B 1B 1B 1B 1B	*	L01-2911-05 L01-2916-15 L01-2916-15 L01-2921-05 L01-2926-15	PØWER TRANSFØRMER PØWER TRANSFØRMER PØWER TRANSFØRMER PØWER TRANSFØRMER PØWER TRANSFØRMER	KP UMUEX E KP UMUEX	
Δ	46	1 B		L01-2926-15	POWER TRANSFORMER	E	
	50 55	2C 2B		N09-0292-05 N29-0035-05	STEPPED SCREW(3X19)GND PUSH RIVET(3.5X5.5)		
☆	61 62 S1 S1 S1	1B 1B 1B 1B 1B		\$90-0063-05 \$90-0067-05 \$40-1014-05 \$40-1015-05 \$40-1047-05	REMOTE SWITCH SHAFT(REC OUT) REMOTE SWITCH SHAFT(SPEAKER) PUSH SWITCH (POWER TYPE) PUSH SWITCH (POWER TYPE) PUSH SWITCH (POWER TYPE)	UM <u>UE</u> X KP E	
Δ Δ	S2 +3 S2 +3	1C 1C		\$31-2082-05 \$31-2082-05	SLIDE SWITCH(AC VØLT. SEL) SLIDE SWITCH(AC VØLT. SEL)	E UM <u>UE</u> X	
			,		PLY (X00-2280-11)	T	
	C1 -6 C7 -10 C11 C12 C14			CK45E2H103P CE04FW1H102MEL CE04FW1V101MEL CE04FW1H100MEL CE04FW1V101MEL	CERAMIC		
Δ	C15 C16 ,17 C18 C19			CE04FW1H101MEL CE04FW1C470MEL CE04FW1H101MEL C91-0079-05	ELECTR® 100UF 50WV ELECTR® 47UF 16WV ELECTR® 100UF 50WV CERAMIC 0.01UF AC125V	XE	
Δ Δ Δ	F1 F1 F2 +3 F2 +3	1B 1B 1B 1B 1B		F05-402205 F05-402405 F06-502205 F05-202305 F05-202905	FUSE 250V 4A FUSE (SEMK®) 250V F4A FUSE (UL) 250V 5A FUSE 250V 2A FUSE (SEMK®) 250V F2A	UM <u>UE</u> XE KP UM <u>UE</u> XE	
Æ Æ	F4 F4 F4	1B 1B 1B		F05-4022-05 F05-4024-05 F06-5022-05	FUSE 250V 4A FUSE (SEMK®) 250V F4A FUSE (UL) 250V 5A	UM <u>UE</u> XE KP	
	70 70 70	1B 1B 1B		J13-0041-05 J13-0041-05 J13-0054-05	FUSE CLIP FUSE CLIP FUSE CLIP	KPUM UE XE	
	R1 R2 R3 +4 R5 R6		* * *	RD14GB2E391JTS RD14AB2E391JTS RS14DB3D22OJTE RD14AB2E2R2JTS RD14GB2E5R6JTS	FL-PR00F RD 390 J 1/4W FL-PR00F RD 390 J 1/4W FL-PR00F RS 22 J 2W FL-PR00F RD 2.2 J 1/4W FL-PR00F RD 5.6 J 1/4W		
	R7 R9 R10		* *	RD14AB2E153JTS RS14DB3D82OJTE RS14DB3A152JTE	FL-PR00F RD 15K J 1/4W FL-PR00F RS 82 J 2W FL-PR00F RS 1.5K J 1W		

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参照番号	位置	Parts 重新	部品番号	部品	名/規	格		marks 備考
R11 R13		*	RD14AB2E4R7JTS RS14DB3D122JTE	FL-PROOF RD FL-PROOF RS	4.7 1.2K	J 1/4W J 2W		
D1 D2 D3 -7 D8 D10			\$15VB20 D5FB20 DSM1A1 RD27E(B1) RD13E(B1)	DIODE DIODE DIODE ZENER DIODE ZENER DIODE				And the control of th
D11 ,12 D11 ,12 Q1 Q2 Q3			1S1555 1S2076 2SD313V-AL 2SC2003(L+K) 2SD313V-AL	DIØDE DIØDE TRANSISTØR TRANSISTØR TRANSISTØR				
Q4 Q4			2SC2328 2SC945(A)	TRANSISTØR TRANSISTØR				
			POWER AMPLI	FIER (X07-220	00-11)			
C1 ,2 C1 ,2 C1 ,2 C3 ,4 C5 ,6			CC45FSL1H101J CQ09FS1H101JZS CQ09FS1H101JZS CC45FSL1H470J CC45FSL1H101J	CERAMIC PBLYSTY PBLYSTY CERAMIC CERAMIC	100PF 100PF 100PF 47PF 100PF]]]]	XE KPUM UE XE XE	
C5 ,6 C5 ,6 C7 ,8 C9 -12 C13 ,14			CK45FB1H471K CK45FB1H471K CK45FB1H102K CE04FW1J010MEL CK45B2H331K	CERAMIC CERAMIC CERAMIC ELECTRO CERAMIC	470PF 470PF 0.001UF 1.0UF 330PF	K K K 63WV K	KPUM <u>UE</u>	
C15 ,16 C15 ,16 C15 ,16 C19 C19 ,20			CC45FSL1H180J C91-0169-05 C91-0169-05 CC45FSL1H470J CC45FSL1H330J	CERAMIC POLYSTY POLYSTY CERAMIC CERAMIC	18PF 18PF 18PF 47PF 33PF	Ј К Ј Ј	XE KPUM <u>UE</u> XE KPUM	
C19 ,20 C20 C21 ,22 C21 ,22 C21 ,22			CC45FSL1H330J CC45FSL1H470J CC45FSL1H010C CC45FSL1H010C CC45FSL1H02OC	CERAMIC CERAMIC CERAMIC CERAMIC CERAMIC	33PF 47PF 1.0PF 1.0PF 2.0PF	J C C C	UE XE KPUM UE XE	
C23 C24 C25 ,26 C25 ,26 C25 ,26			CE04FW1A470MEL CE04FW1A470MEL CC45FSL1H150J C91-0169-05 C91-0169-05	ELECTR® ELECTR® CERAMIC P®LYSTY P®LYSTY	47UF 47UF 15PF 18PF 18PF	10WV 10WV J K K	XE KPUM <u>UE</u>	
C27 ,28 C29 -32 C33 -36 C37 C39			CC45FSL1H101J CK45FB1H561K CE04FW2A4R7MEL CE04FW1HR22MEL CE04FW1HR22MEL	CERAMIC CERAMIC ELECTRO ELECTRO ELECTRO	100PF 560PF 4. 7UF 0. 22UF 0. 22UF	J K 100WV 50WV 50WV		
C41 ,42 C45 ,46 C45 ,46 C45 ,46 C47 ,48			CF92FV1H473J CQ93FM1H1O4J CQ93FM1H473J CQ93FM1H473J CQ93FM1H1O4J	MF MYLAR MYLAR MYLAR MYLAR	0. 047UF 0. 10UF 0. 047UF 0. 047UF 0. 10UF	J J	XE KPUM VE	
C49 ,50 C51 ,52 C53 ,54 C53 ,54			CE04HW1E4R7MEL CD93FM1H334J CD93FM1H333J CD93FM1H333J	NP-ELEC MYLAR MYLAR MYLAR	4. 7UF 0. 33UF 0. 033UF 0. 033UF		KPUM <u>UE</u>	

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053 , 055 , 057 - 061	56 60				CQ93FM1H683J CQ93FM1H683J CK45FB1H472K CEO4FW1A47OMEL CEO4FW2AR22MEL	MYLAR MYLAR CERAMIC ELECTRØ ELECTRØ		0.068UF 0.068UF 4700PF 47UF 0.22UF	J K 10	3M∆ ¶∧	XE XE	
064 066 067 068 069	65			*	CE04FW2A330MEL CE04HW1A470MEL CE04FW1A220MEL CE04FW1V4R7MEL CE04GW1C470MEL	ELECTRO NP-ELEC ELECTRO ELECTRO LL-ELEC		33UF 47UF 22UF 4. 7UF 47UF	1.00 1.00 1.00 350 1.60	40 40		
070 : 072 074 075				*	C90-1305-05 C90-1301-05 CC45FSL1H271J CQ93FM1H223J	ELECTRO ELECTRO CERAMIC MYLAR		6800UF 12000UF 270PF 0. 022UF	90) J			444
75		20	;		E20-0821-05	LOCK TERM	INA	L B®ARD(8P)S	PEAKER		
					J61-0307-05	WIRE BAND						
	, 2 , 4				L33-0275-05 L39-0085-05	CHBKE COIL		SATI®N C	81L			
78 79		1 E	; ;,1C		N09-0287-05 N09-1202-05	SEMS(TAPT TAPPING S			X8(V X14()			
R23 R39 R41 R43 R45	,40 ,42 ,44			*	RN14BK2C2000FTS RD14GB2E221JTS RD14GB2E561JTS RD14AB2E681JTS RD14GB2E681JTS	RN FL-PR00F FL-PR00F FL-PR00F	RD RD	200. 0 220 560 680 680	F J J J	1/6W 1/4W 1/4W 1/4W 1/4W		
R51 R59 R63 R67 R69	-62 -66 •68				RD14GB2E331JTS RD14AB2E561JTS RD14GB2E151JTS RD14GB2E220JTS RD14AB2E220JTS	FL-PR00F FL-PR00F FL-PR00F FL-PR00F	RD RD RD	330 560 150 22 22	J J J	1/4W 1/4W 1/4W 1/4W 1/4W		
R73 R75 R77 R81 R83	,76 -80 ,82				RD14GB2E220JTS RD14AB2E220JTS RD14GB2E220JTS RD14AB2E220JTS R90-0187-05	FL-PROOF F FL-PROOF F FL-PROOF F FL-PROOF MULTI-COME	RD RD RD	22 22 22 22 22 0. 22X2	J J J K	1/4W 1/4W 1/4W 1/4W 5W		
R111 R112 R113 R117 R118	-116			* * *	RS14KB3D22OJTE RS14DB3D22OJTE RN14BK2C91O2FTS RS14KB3A2R7JTE RS14DB3A2R7JTE	FL-PROOF I FL-PROOF I RN FL-PROOF I	RS RS	22 22 91.0K 2.7 2.7	J F J J	2W 2W 1/6W 1W 1W		
R119 R121 R127 R128 R129				* * *	RD14AB2E330JTS RS14KB3D180JTE RD14AB2E152JTS RS14DB3A122JTE RD14AB2E4R7JTS	FL-PROOF FL-PROOF FL-PROOF FL-PROOF	RS RD RS	33 18 1.5K 1.2K 4.7	J J J	1/4W 2W 1/4W 1W 1/4W		
R130 R131 R132 R140 VR1				*	RD14GB2E4R7JTS RD14AB2E22OJTS RD14GB2E22OJTS RS14KB3D122JTE R12-0502-05	FL-PROOF FL-PROOF FL-PROOF FL-PROOF TRIMMING	RD RD RS	4.7 22 22 1.2K (100)8FF	J J J SET	1/4W 1/4W 1/4W 2W		
VR3	, 4				R12-0302-05	TRIMMING F	707	(500) IDL	Ε			

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RL1 ,2 S1 TS1	10	*	S51-2045-05 S90-0068-05 S59-1071-05	MAGNETIC RELAY SLIDE SWITCH(SPEAKERS) THERMAL SWITCH		
D1 ,2 D3 -6 D7 ,8 D9 -12 D13 ,14			152076 152076 STV-2H RU4Z 152076A	DIODE DIODE VARISTOR DIODE DIODE		
D15 +16 D17 D18 D19 D20			RD24J(B2,B3) 1S2076 RD5.6J(B1) E-102 RD16J(B2)	ZENER DIØDE DIØDE ZENER DIØDE CØNSTANT CURRENT DIØDE ZENER DIØDE		
D21 D22 -25 IC1 ,2 IC3 Q1 ,2			RD22J(B2) 1S2O76A TA2O3O UPC1237H UPA6BH(K,L)	ZENER DIØDE DIØDE IC BUFFER IC PRØTECTIØN DUAL FET		
Q3 -8 Q9 ,10 Q11 ,12 Q13 ,14 Q15 ,16		*	2SC1845 2SA1347 2SC2632(Q,R,S) 2SC2632A 2SC2632(Q,R)	TRANSISTØR DUAL TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR		
017 ,18 019 ,20 021 ,22 023 ,24 025 ,26		*	25A1124A 25C1841 25C2631A 25A1123A 25C2592*1	TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR		
027 ,28 029 ,30 031 ,32 033 ,34 035 ,36			2SA1112*1 DAT1018N DAT1018P DAT0612N DAT0612P	TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR		
Q37 ,38 Q39 Q40 -42 Q43 ,44 Q45			25C232O(E,F) 25A999 25A999(E,F) 25C2631A 25A988	TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR		
Q46 Q47			2SC2632(Q ₃ R ₃ S) 2SA957	TRANSISTØR TRANSISTØR		-
			PRE AMPLIF	IER (X08-2160-81)	1 I	
D15 -19 D2O -22 D23	1A,1B 1A,1B 1A		B30-1012-05 B30-1010-05 B30-0483-05	LED(SLP-981C-50) SELECTOR LED(SLP-281F-50U)TAPE A.B.C LED(SLP-170B) POWER		
C1 -3 C4 C5 C6 ,7 C8 .9			CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J CC45FSL1H121J	CERAMIC 120PF J	XE XE XE XE XE	
C10 C11 -16 C17 ,18 C19 ,20 C21 ,22			CC45FSL1H121J CC45FSL1H121J CC45FSL1H101J CE04FW0J331M CK45FB1H681K	CERAMIC 120PF J CERAMIC 120PF J CERAMIC 100PF J ELECTR® 330UF 6.3WV CERAMIC 680PF K	XE	

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C23 -28 C23 ,24 C23 ,24 C29 ,30 C31 ,32		*	CK45FB1H222K CK45FB1H222K CK45FB1H222K CEO4FWOJ102MEL CQ93HP2A683G	CERAMIC 2200PF K CERAMIC 2200PF K CERAMIC 2200PF K ELECTR® 1000UF 6.3WV MYLAR 0.068UF G	XE KPUM <u>UE</u>
C33 ,34 C35 ,36 C37 ,38 C39 ,40 C41 ,42		*	CQ93HP2A102G CQ93HP2A203G CE04FW1A101MEL. CE04FW0J222MEL. CK45FB1H102K	MYLAR 1000PF G MYLAR 0.020UF G ELECTRØ 100UF 10WV ELECTRØ 2200UF 6.3WV CERAMIC 0.001UF K	
C43 ,44 C45 ,46 C47 ,48 C49 ,50 C51 ,52			CE04FW1A101MEL CE04HW1H4R7MEL CQ09FS1H331JZS CF92FV1H103J CE04FW1E101MEL	ELECTRØ 100UF 10WV NP-ELEC 4.7UF 50WV PØLYSTY 330PF J MF 0.010UF J ELECTRØ 100UF 25WV	
C53 ,54 C55 ,56 C57 C58 ,59 C101,102		*	CE04FW1H471MEL CC45FSL1H101J CK45B1H472K CK45B1H471K CE04FW1C100MEL	ELECTR® 470UF 50WV CERAMIC 100PF J CERAMIC 0.0047UF K CERAMIC 470PF K ELECTR® 10UF 16WV	
C103-106 C107,108 C109 C110 C111,112			CE04FW1H3R3MEL CE04FW1H4R7MEL CE04FW1E220MEL CK45FB1H102K CE04FW1H4R7MEL	ELECTR® 3.3UF 50WV ELECTR® 4.7UF 50WV ELECTR® 22UF 25WV CERAMIC 0.001UF K ELECTR® 4.7UF 50WV	
C113		*	C90-1297-05	ELECTR® 470UF 35WV	
82 E1 E2 E3 E4	18	*	E11-0103-05 E13-0499-05 E13-0497-05 E13-0814-05 E13-0225-05	PHONE JACK(HEADPHONE) PHONO JACK(4P)PHONO;CD PHONO JACK(4P)TUNER;AUX PHONO JACK(8P)TAPE A;TAPE B PHONO JACK(2P)FRONT AUX	
E5			E13-0818-05	PHONO JACK(8P)TAPE C,PRE I/O	
L1 ,2			L40-1011-43	SMALL FIXED INDUCTOR(100UH,K)	XE
R35 ,36 R37 ,38 R39 ,40 R45 ,46 R63 -66		* * *	RN14BK2E82R0FTS RN14BK2E4752FTS RN14BK2E3831FTS RN14BK2E3R30GTS RD14GB2E100JTS	RN 82.0 F 1/4W RN 47.5K F 1/4W RN 3.83K F 1/4W RN 3.30 G 1/4W FL-PROOF RD 10 J 1/4W	
R71 -74 R139,140			RS14DB3A101J RS14DB3D561J	FL-PR00F RS 100 J 1W FL-PR00F RS 560 J 2W	
RL1 51 52 53 54	2B 1C 2B	*	\$51-2061-05 \$90-0065-05 \$42-2117-05 \$90-0078-05 \$42-5033-05	REED RELAY ELECTROMAGNETIC SW MM/MC MULTIPLE PUSH SW(2KEY)CD,MM/MC SLIDE SWITCH REC OUT MULTIPLE PUSH SW(5KEY)SELECTOR	
55 56 57	2B 2B 1C	*	\$42-3086-05 \$40-2122-05 \$31-2059-05	MULTIPLE PUSH SW(3KEY)A,B,C PUSH SWITCH AUX SLIDE SWITCH PH®N® IMP	
D1 -4 D1 -4 D5 .6 D7 .8			1S1555 1S2076 RD5.6J(B2) MA27W(A)	DINDE DINDE ZENER DINDE VARISTNR	

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D9 ,10 D11 D12 D12 D13		*	RD20J(B2) RD5.6J(B2) 1S1555 1S2076 E-152	ZENER DIØDE ZENER DIØDE DIØDE DIØDE CØNSTANT CUR	RRENT DIÐI	DE	
D14 D24 D24 D25 +26 D27 -32			152076A 151555 152076 WO6B E-272	DINDE DINDE DINDE DINDE CONSTANT CUR	RRENT DIØI	DE	
D33 -38 IC1 IC1 Q1 -4 Q5 -12	-		1SS176 NE5532P NJM5532D 2SK170(BL,V) 2SC2557(S,T)	DINDE IC NP AMP IC NP AMP FET TRANSISTOR			
Q13 -18 Q23 ,24 Q25 ,26 Q27 Q28			2SC945(A)(Q,P) 2SC2003(L,K) 2SA954(L,K) 2SD313V-AL 2SB514(E,F)	TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR			
031 -36 037 ,38 039 -42 043			2SC945(A)(Q,P) 2SD571(L,K) 2SC945(A)(Q,P) 2SA992(F,E)	TRANSIST®R TRANSIST®R TRANSIST®R TRANSIST®R			
			TONE AMPLIFI	ER (X11-1890	-01)		
C1 ,2 C3 ,4 C5 ,6 C7 ,8 C9 ,10		*	CQ93AP2A184J CQ09FS1H101JZS CQ93FM1H183K CQ93FM1H473K CC45FSL1H150J	POLYPRO POLYSTY MYLAR MYLAR CERAMIC	0. 18UF 100PF 0. 018UF 0. 047UF 15PF	J K K J	
C11 ,12 C13 -18 C19 -21 C22 ,23 C24		*	CEO4FW1HO1OMEL CQ93FM1H334K CQ93FM1H183K CQ93FM1H183K CQ93FM1H183K	ELECTR® MYLAR MYLAR MYLAR MYLAR	1. OUF 0. 33UF 0. 018UF 0. 018UF 0. 018UF	50WV K K K K	
C25 C26 C27 -30 C31 ,32 C33 ,34			CC45FSL1H101J CC45FSL1H101J CE04FW1E100MEL CE04FW1H010MEL CK45FB1H561K	CERAMIC CERAMIC ELECTRO ELECTRO CERAMIC	100PF 100PF 10UF 1. OUF 560PF	J J 25WV 50WV K	
C35 ,36 C37 ,38 C39 C40 C41			CE04FW1H101MEL CE04FW1H010MEL CK45FF1H103Z CK45FB1H152K CK45FB1H222K	ELECTRN ELECTRN CERAMIC CERAMIC CERAMIC	100UF 1.0UF 0.01UF 1500PF 2200PF	50WV 50WV Z K K	
C42 C43 C44 C45 •46			CK45FF1H1O3Z CK45FB1H222K CEO4FW1A22OMEL CQ93FM1H273J	CERAMIC CERAMIC ELECTRO MYLAR	0.01UF 2200PF 22UF 0.027UF	Z K 10WV J	
-			J61-0307-05	WIRE BAND			
R1 ,2 R3 ,4 R5 ,6 R35 ,36		* * *	RN14BK2E4701FTS RN14BK2E3300FTS RN14BK2E1002FTS RS14GB3D122JMA	RN RN RN FL-PRØØF RS	4.70K 330.0 10.0K 1.2K	F 1/4W F 1/4W F 1/4W J 2W	

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VR1 VR2 VR3 ,4	1B 1B 1B	*	R06-5098-05 R08-5053-05 R06-3032-05	PØTENTIØMETER(200KX2)BALANCE PØTENTIØMETER(100KX2)VØLUME PØTENTIØMETER(10KX2) BASS,TREB		
RL1 S1 S2 S3 S4	1B 1B 1B 1B	*	\$51-2072-05 \$42-2082-05 \$29-2026-05 \$29-2025-05 \$42-3064-05	MAGNETIC RELAY MULTI PUSH SW(MØDE,SURSØNIC) RØTARY SWITCH(LØUDNESS LEVEL) RØTARY SWITCH(LØUDNESS FREQ) MULTI PUSH SW(TØNE,TURN FREQ)		
S5	2B		S40-1065-05	PUSH SWITCH (MUTING)		
D1 ,2 D3 ,4 D5 ,6 IC1 IC2		*	RD18J(B2,B3) RD13E(B3) 1S2D76A NJM2O41D-D UPD4O27BC	ZENER DIØDE ZENER DIØDE DIØDE IC ØP AMP IC J-K FLIP-FLØP		
Q1 ,2 Q3 Q4 Q5 Q6			2SC945(A)(Q,P) 2SA733(A)(Q,P) 2SC945(A)(Q,P) 2SA954(M,L) 2SA733(A)(Q,P)	TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR TRANSISTØR		
Q7 Q 9			2SA954(M,L) 2SC945(A)(Q,P)	TRANSISTØR TRANSISTØR		

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SPECIFICATIONS

Power Amplifier Section

Power Output

150 watts* per channel minimum RMS, both channels driven at 8 ohms from 20 Hz to 20,000 Hz with no more than 0.004% total harmonic distortion.

Both Channels Driven into

8 ohms at 1 kHz 160 W + 160W

Dynamic Power Output into

Total Harmonic Distortion

(20 Hz to 20,000 Hz) AUX input to-

SPEAKER output 0.004% at rated power

into 8 ohms

0.003% at 1/2 rated

power into 8 ohms

Intermodulation Distortion

(60 Hz: 7 kHz = 4:1) 0.003% at rated power

into 8 ohms

Damping Factor 1,000 at 50 Hz

Transient Response

Rise Time 1.7 μ s

Frequency Response DC to 200 kHz + 0 dB, - 3dB

Speaker impedance Accept 4 ohms to 16 ohms

Input Sensitivity/Impedance

Phono MM 2.5 mV/47k ohms and 100 k ohms

Phono MC 0.1mV/100 ohms

Tuner, AUX, Tape

Adaptor in 150 mV/47 k ohms

Signal-to-Noise Ratio (IEC-A)

Phono MC 70 dB for 100 μV input

Tuner, AUX, Tape 108 dB

Maximum Input Level for Phono

MM 200 mV (RMS), T.H.D. 0.003% at 1,000 Hz

MC 8 mV (RMS), T.H.D.

0.003% at 1,000 Hz

Output Level/Impedance

Tape REC (Pin).

Adaptor out 150 mV/680 ohms

Frequency Response for Phono . . . RIAA standard curve ±0.2dB

(20 Hz to 20,000 Hz)

Bass $\pm 10\,\mathrm{dB}$ at 50 Hz, 100 Hz

Loudness Control

(at -30 dB VOLUME Level) . . . +3/6/9 dB at 30/60/90 Hz

Subsonic Filter 18 Hz, 6 dB/oct.

General

Power Consumption 4 A (U.S.A. and Canada)

550 W (European countries)

1500 W (Others)

AC Outlets Switched 2, Unswitched 1

(Except U.K., European, Australian Countries)

H: 158 mm (6-7/32")

D: 383 mm (15-3/32") Weight (Net) 14.7 kg (32.3 lb)

* Measured pursuant to Federal Trade Commission's Trade Regula-

tion rule on Power Output Claims for Amplifier in U.S.A.

Note:

We follow a policy of continuous advancements in development. For this reason specifications may be changed without notice.

Note:

Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on, the U.S. (K) standard, and provides information on regional circuit modification through use of alternate schematic diagrams, and information on regional component variations through use of parts list

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